

# Sustainable Use of Energy Carriers in the KASK Region – an Interreg IVA project

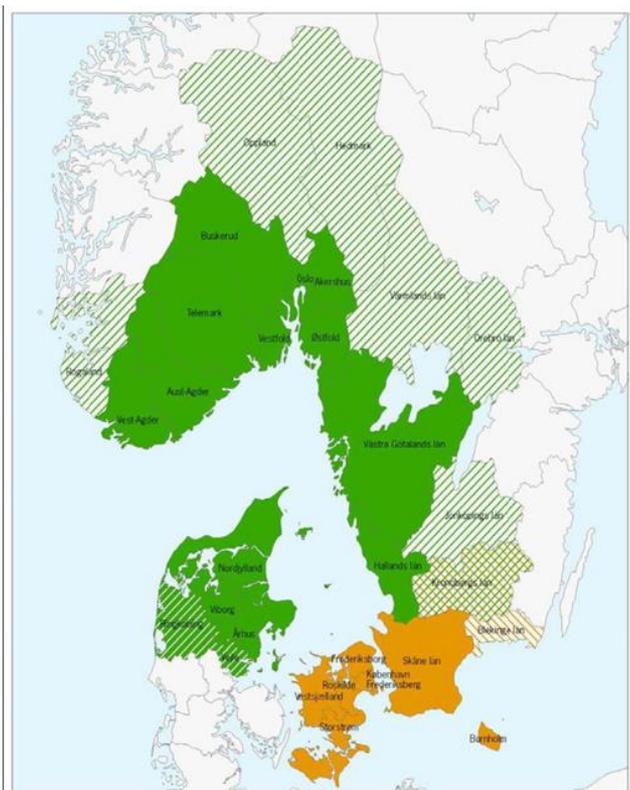
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Fagseminar : Energieffektivisering og industriell  
energiledelse

# The KASK region (KASK NO og SE)



**Programområdet**

- Sub-program Kattégatt-Skagerrak
- Sub-program Öresundsregionen
- ▨ Angränsande områden till Sub-program Kattégatt-Skagerrak
- ▨ Angränsande områden till Sub-program Öresundsregionen
- ▨ Angränsande områden i Danmark
- ▨ Angränsande område till båda Sub-programmen

|   | NO    | SE    | Total |
|---|-------|-------|-------|
| People (Mill)                                 | 2.2   | 1.6   | 3.8   |
| Land area (Km <sup>2</sup> )                  | 58400 | 24000 | 72400 |
| Value creation (BP NOK Bill)                  | 870   | 451   | 1321  |
| Stationary energy consumption (TWh/year 2009) | 87.6  | 67.5  | 155.1 |
| Mobile energy consumption (TWh/year 2009)     | 22.0  | 16.7  | 38.7  |
| Emissions of CO <sub>2</sub> (Mt/year 2009)   | 10.1  | 11.6  | 21.7  |

# Sustainable Use of Energy Carriers in the KASK Region

## Project background

- Clear international and national targets for transformation to a sustainable energy system with a high level of renewable energy and largely reduced Greenhouse Gas Emissions.
- A wish to use the KASK region energy resources and develop the related infrastructure in the most optimal way.
- Use the possibilities for good coordination within the KASK region regarding future development, energy carriers and the energy mix.
- The need to identify good development paths towards a more sustainable energy system.
- Identify potential barriers towards a more sustainable development and areas that require a stronger focus to reach the goals.

# Sustainable Use of Energy Carriers in the KASK Region

## Project targets



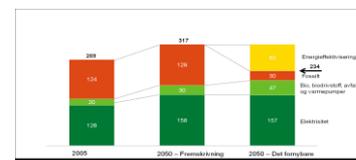
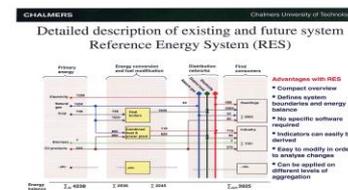
- Study how **improving energy efficiency and large scale integration of renewable energy** can contribute to economic and environmental sustainable development of the Kattegat-Skagerrak Region (KASK).
- **Identify development pathways** within the area of energy and climate that utilize the natural strengths in each part of the region, enable coordination between the regions and develop sustainable solutions for industry, business development and people.



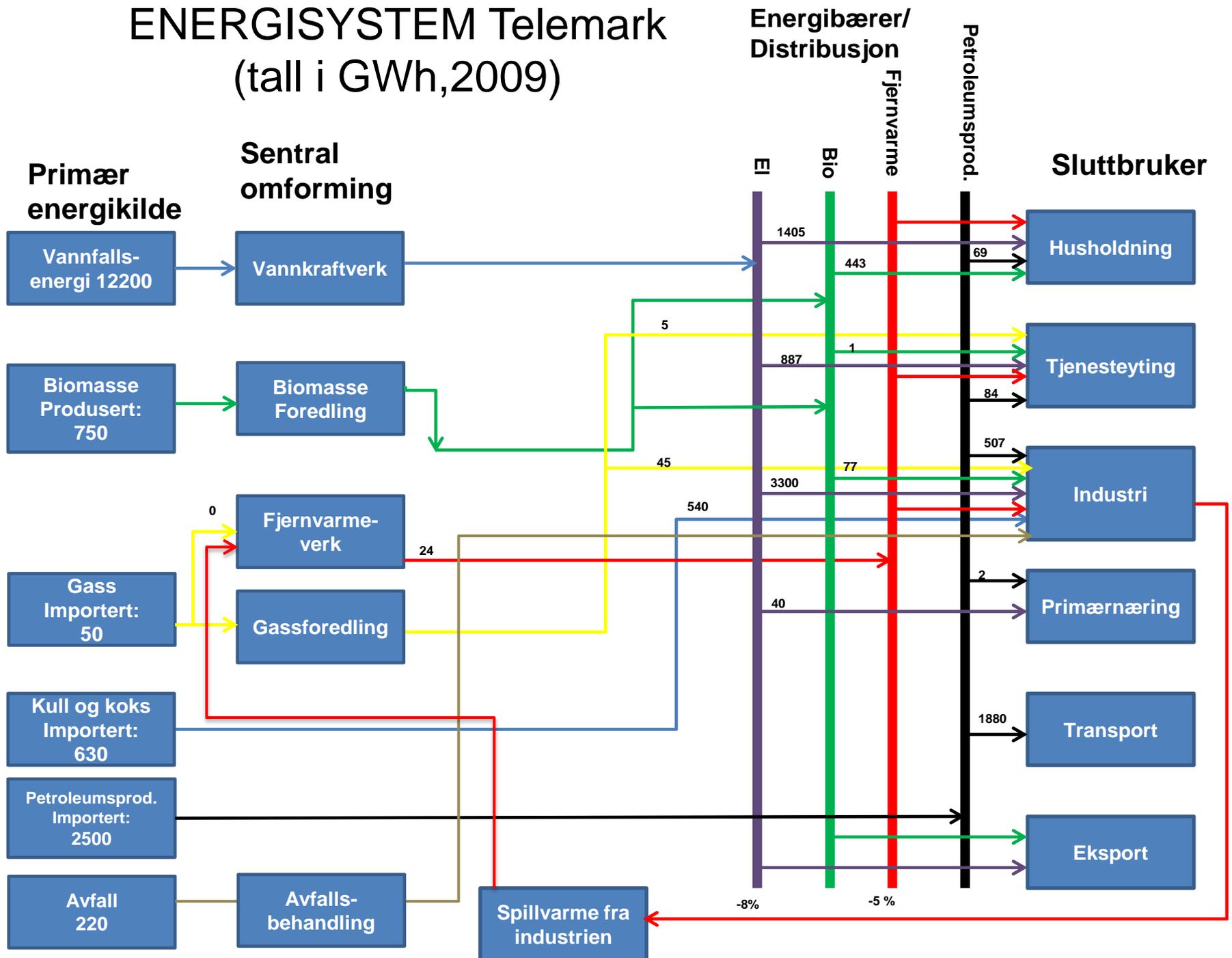
# Sustainable use of energy carriers in the KASK region

## Work Package Description and Targets

- **WP 1:** Map energy use in the region and establish a Reference Energy System (RES)
- **WP 2:** Give examples regarding energy efficiency improvement in key Industries
- Describe energy optimisation potential in existing buildings
- Identify challenges related to integration of wind/renewable energy
- **WP 3:** Scenarios 2020, 2030 and 2050
- Possible development paths and collaboration in the KASK region
- **WP 4:** Proposals/Communication and Final Reporting

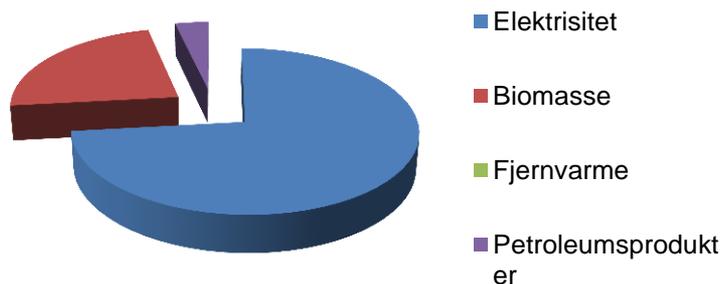


# ENERGISYSTEM Telemark (tall i GWh,2009)

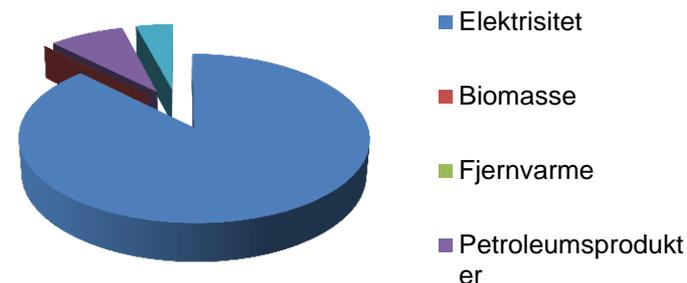


# Fordeling av energikilder på sluttbruker

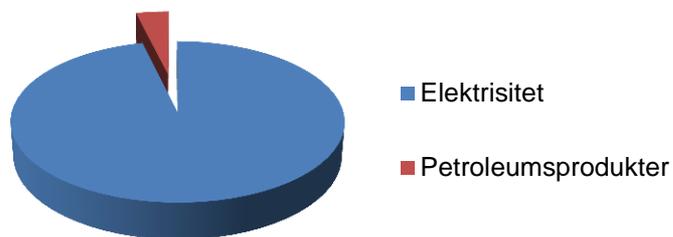
## Husholdninger



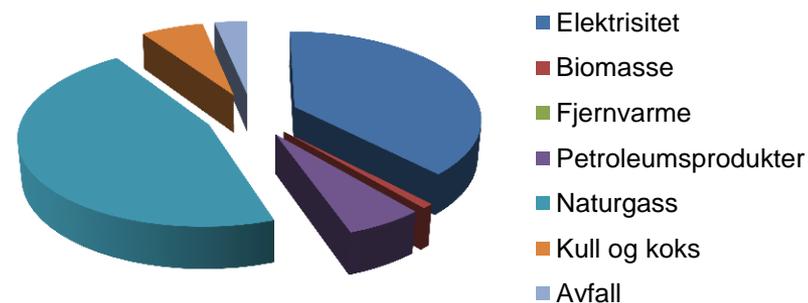
## Tjenesteyting



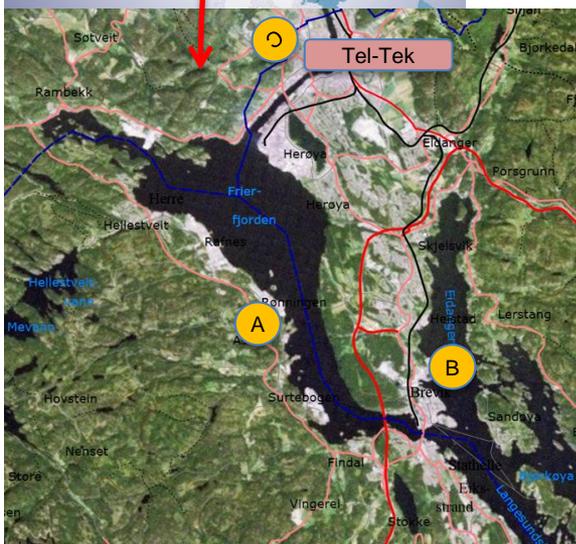
## Primærnæring



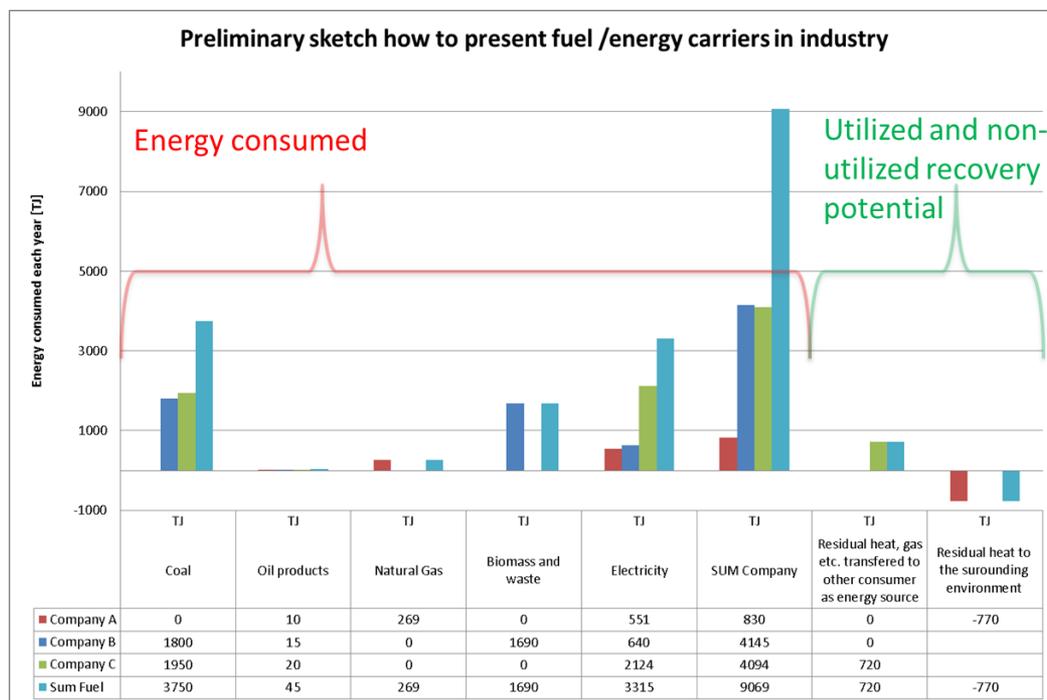
## Industri



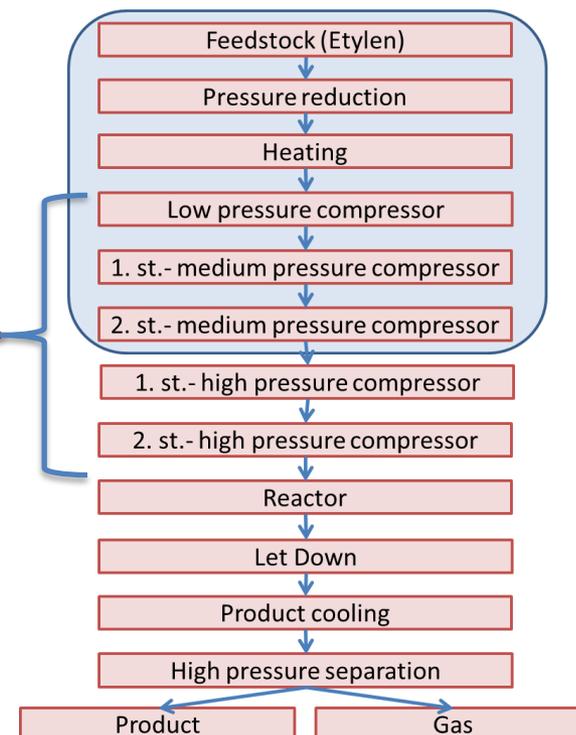
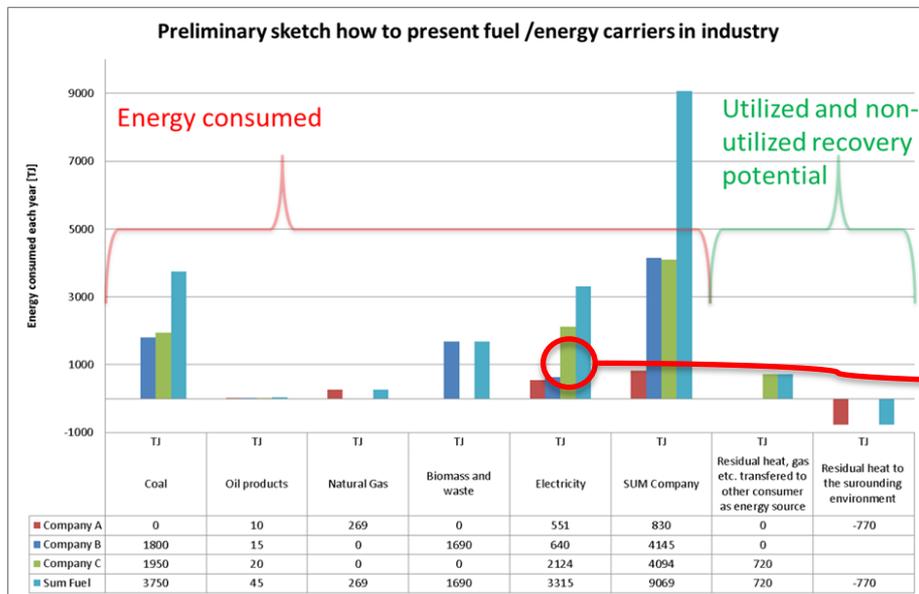
# Example energy related information from different type of industries



- A) Ineos Bamble – Petrochemical – PEL
- B) Norcem – Mineral – Cement
- C) Eramet – Metallurgical – FeMn



# Look at specific production steps optimization by data analysis



- Pick one sample for deep analysis with «smart production» concept
- Complex production loops difficult to optimize even for experienced operators
- Example: Electricity consumption for running compressors in a PEL production

## Method (proposal) for further work within energy efficiency in selected industries

- Define timeframes
- Select Industries for further studies.
  - On the Swedish side the following are proposed: Preem Lysekil and Stenungssund Industrycluster.
  - On the Norwegian side the following Industries are involved: Norcem (cement), Ineos Polyolefins, Eramet Porsgrunn ( FeMn).
- Selection of energy efficiency improvement actions in the different time perspectives (short term (2020), mid term (2030) and long term (2050))
- Evaluation of method and effectiveness of different energy reduction
- Analysis
- Reporting

# Example how results can be summarized and presented

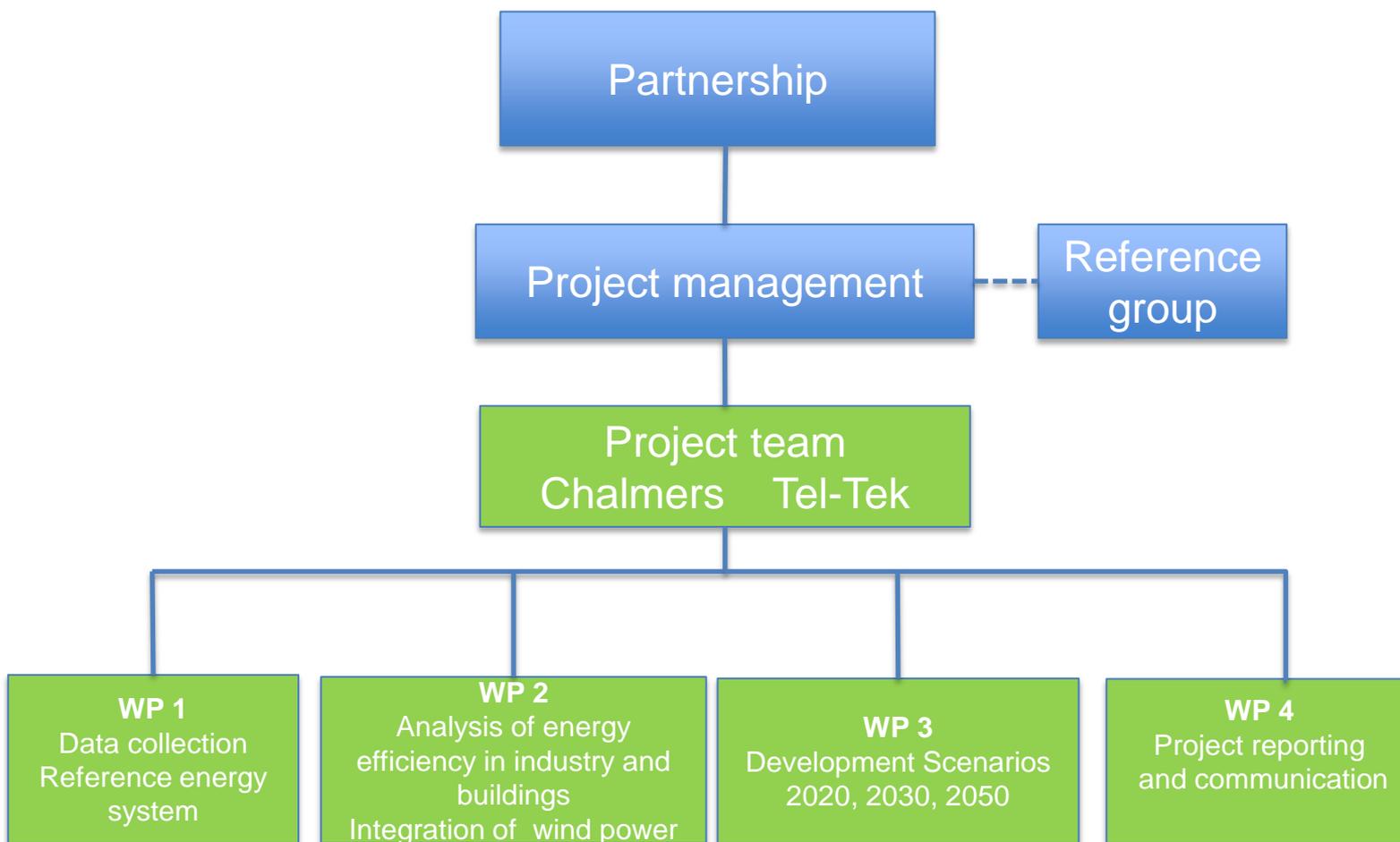
| Potential energy reduction (GWh)                                  |                                     |          |          |          |          |          |         |
|---|-------------------------------------|----------|----------|----------|----------|----------|---------|
| Company   | <u>A</u>                            | <u>B</u> | <u>C</u> | <u>D</u> | <u>E</u> | <u>F</u> | Sum     |
| Energy efficiency actions   | X1                                  | X2       | X3       | X4       | X5       | X6       | XXX GWh |
| Energy efficiency actions   | X2                                  | Y4       | Y5       | Y6       | Y7       | Y8       | YYY GWh |
| Where Xn can be different energy efficiency actions, for example: |                                     |          |          |          |          |          |         |
| X1  | "energy optimisation in production" |          |          |          |          |          |         |
| X2  | Energy re-use                       |          |          |          |          |          |         |
| X3  | CCS                                 |          |          |          |          |          |         |
| X4  | Change of raw materials             |          |          |          |          |          |         |
| Etc..   |                                     |          |          |          |          |          |         |

## Further work – invitation to further industries to give input and joining the project

- Continue to collect data from already involved industries
- Input and comments from new industry partners?
- PROSIN workshop – your comments and ideas are welcome
- Using the input to prepare KASK regional overview, and use as input for development paths.

# Project organisation

Sustainable use of energy carriers in the KASK region



# Project Partnership

(list not complete)



# Thank you !

- For more information, please see

[Http://kask-energy.eu/](http://kask-energy.eu/)

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